

(12) UK Patent Application (19) GB (11) 2 268 375 (13) A

(43) Date of A Publication 05.01.1994

(21) Application No 9216168.6

(22) Date of Filing 30.07.1992

(30) Priority Data

(31) 07906812

(32) 30.06.1992

(33) US

(71) Applicant(s)

Industrial Technology Research Institute

(Incorporated in Taiwan)

195 Section 4, Chung Hsing Road, Chutung, Hsingchu,
Taiwan 31015, Taiwan

(72) Inventor(s)

Chi-Chang Chen

Shian-Ming Tzeng

Chen-Chi Fan

(74) Agent and/or Address for Service

Withers & Rogers

4 Dyer's Buildings, Holborn, LONDON, EC1N 2JT,
United Kingdom

(51) INT CL⁵

H04L 29/10

(52) UK CL (Edition M)

H4P PF PPEC

H4M MTX1

(56) Documents Cited

None

(58) Field of Search

UK CL (Edition K) H4M MTA1 MTX1, H4P PF PPEC PT

INT CL⁵ H04L 29/06 29/10

(54) Adapter for transmission lines using HDLC frames

(57) An adapter for connecting a first low bit rate transmission link and a second high bit rate transmission link is disclosed. The adapter (D2, Fig.3) receives frames transmitted via the first link (L1). The frames are of variable length and include (Fig.5) a flag, an address field, a control field, a variable length data field, a frame check sequence and a length code indicative of the frame length, which length code does not alter the frame check sequence. The adapter includes a processor which determines for each frame in response to the length code a specific time at which the adapter begins transmitting the frame on the second transmission link (L2), so that the completion of the transmitting of the frame on the second link substantially coincides with the completion of the receiving of the frame from the first transmission link. The length code of each frame is removed when it is transmitted over the second transmission link. The inventive adapter is especially useful in certain kinds of ISDN networks.

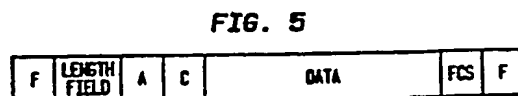
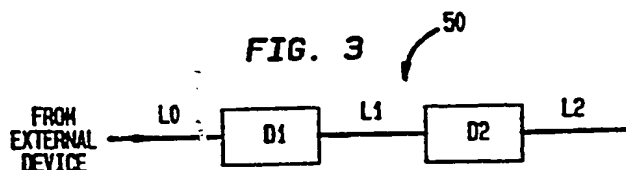


FIG. 1
(PRIOR ART)

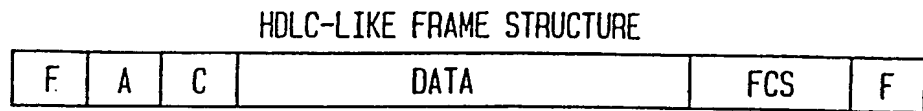


FIG. 3

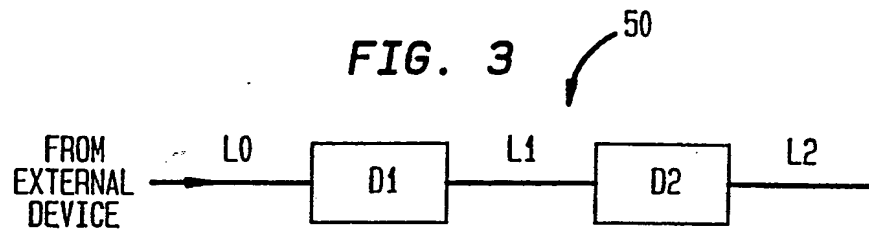


FIG. 4

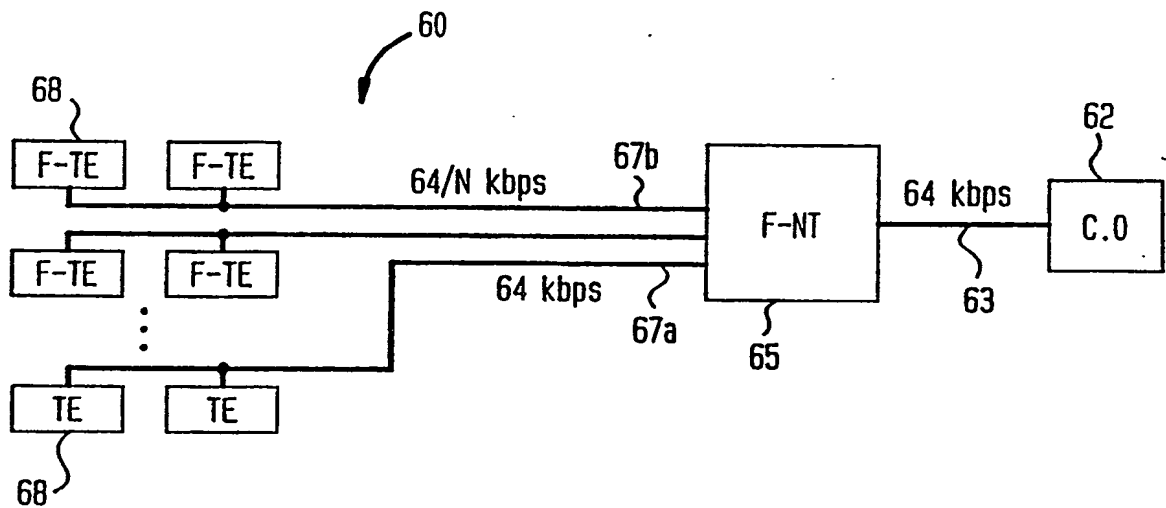


FIG. 5

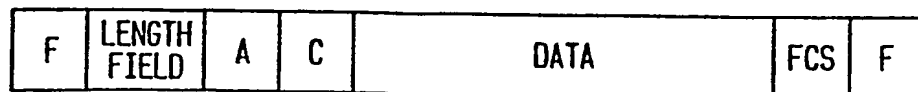


FIG. 6A CODING TABLE FOR LENGTH 0 TO 49

DATA	PATTERN	DECIMAL VALUE OF FIRST BYTE	REPRESENT LENGTH	NOTE
00000000	0110010100111111	0		FIVE '1's
00000001	0111010100011110	1	1	
00000010	0100010101111101	2		FIVE '1's
00000011	0101010101011100	3	3	
00000100	0010010110111011	4	4	
00000101	0011010110011010	5	5	
00000110	0000010111111001	6		FIVE '1's
00000111	0001010111011000	7	7	
00001000	1110010000110111	8	8	
00001001	1111010000010110	9		FIVE '1's
00001010	1100010001110101	10	10	
00001011	1101010001010100	11	11	
00001100	1010010010110011	12	12	
00001101	1011010010010010	13	13	
00001110	1000010011110001	14	14	
00001111	1001010011010000	15		FIVE '1's
00010000	0111011100001110	16	16	
00010001	0110011100101111	17	17	
00010010	0101011101001100	18	18	
00010011	0100011101101101	19	19	
00010100	0011011110001010	20	20	
00010101	0010011110101011	21	21	
00010110	0001011111001000	22		FIVE '1's
00010111	0000011111101001	23		FIVE '1's
00011000	1111011000000110	24	24	
00011001	1110011000100111	25	25	
00011010	1101011001000100	26	26	
00011011	1100011001100101	27	27	
00011100	1011011010000010	28	28	
00011101	1010011010100011	29	29	
00011110	1001011011000000	30	30	
00011111	1000011011100001	31		FIVE '1's
00100000	0100000101011101	32	32	
00100001	0101000101111100	33		FIVE '1's
00100010	0110000100011111	34	34	
00100011	0111000100111110	35		FIVE '1's
00100100	0000000111011001	36	36	
00100101	0001000111111000	37		FIVE '1's
00100110	0010000110011011	38	38	
00100111	0011000110111010	39	39	
00101000	1100000001010101	40	40	
00101001	1101000001110100	41	41	
00101010	1110000000010111	42	42	
00101011	1111000000110110	43		FIVE '1's
00101100	1000000011010001	44	44	
00101101	1001000011110000	45	45	
00101110	1010000010010011	46	46	
00101111	1011000010110010	47		FIVE '1's
00110000	0101001101101100	48	48	
00110001	0100001101001101	49	49	

FIG. 6B CODING TABLE FOR LENGTH 50 TO 99

DATA	PATTERN	DECIMAL VALUE OF FIRST BYTE	REPRESENT LENGTH	NOTE
00110010	0111001100101110	50	50	
00110011	0110001100001111	51	51	
00110100	0001001111101000	52		FIVE '1's
00110101	0000001111001001	53	53	
00110110	0011001110101010	54	54	
00110111	0010001110001011	55		
00111000	1101001001100100	56	56	
00111001	1100001001000101	57	57	
00111010	1111001000100110	58	58	
00111011	1110001000000111	59		FIVE '1's
00111100	1001001011100000	60	60	
00111101	1000001011000001	61	61	
00111110	1011001010100010	62		FIVE '1's
00111111	1010001010000011	63		FIVE '1's
01000000	0010110111111011	64		FIVE '1's
01000001	0011110111011010	65	65	
01000010	0000110110111001	66	66	
01000011	0001110110011000	67	67	
01000100	0110110101111111	68		FIVE '1's
01000101	0111110101011110	69		FIVE '1's
01000110	0100110100111101	70	70	
01000111	0101110100011100	71	71	
01001000	1010110011110011	72	72	
01001001	1011110011010010	73	73	
01001010	1000110010110001	74	74	
01001011	1001110010010000	75	75	
01001100	1110110001110111	76	76	
01001101	1111110001010110	77		FIVE '1's
01001110	1100110000110101	78	78	
01001111	1101110000010100	79		FIVE '1's
01010000	0011111111001010	80		FIVE '1's
01010001	0010111111101011	81		FIVE '1's
01010010	00011111110001000	82		FIVE '1's
01010011	00001111110101001	83		FIVE '1's
01010100	0111111101001110	84		
01010101	0110111101101111	85	85	
01010110	0101111100001100	86		FIVE '1's
01010111	0100111100101101	87	87	
01011000	1011111011000010	88		FIVE '1's
01011001	1010111011100011	89	89	
01011010	1001111010000000	90	90	
01011011	1000111010100001	91	91	
01011100	1111111001000110	92		FIVE '1's
01011101	1110111001100111	93	93	
01011110	1101111000000100	94	94	
01011111	1100111000100101	95		FIVE '1's
01100000	0000100110011001	96	96	
01100001	0001100110111000	97	97	
01100010	0010100111011011	98	98	
01100011	0011100111111010	99		FIVE '1's

FIG. 6C CODING TABLE FOR LENGTH 100 TO 149

DATA	PATTERN	DECIMAL VALUE OF FIRST BYTE	REPRESENT LENGTH	NOTE
01100100	0100100100011101	100	100	
01100101	0101100100111100	101	101	
01100110	0110100101011111	102	102	
01100111	0111100101111110	103		
01101000	1000100010010001	104	104	FIVES '1's
01101001	1001100010110000	105	105	
01101010	1010100011010011	106	106	
01101011	1011100011110010	107	107	
01101100	1100100000010101	108	108	
01101101	1101100000110100	109	109	
01101110	1110100001010111	110	110	
01101111	1111100001110110	111		
01110000	0001101110101000	112	112	FIVES '1's
01110001	0000101110001001	113	113	
01110010	0011101111101010	114		
01110011	0010101111001011	115	115	FIVES '1's
01110100	0101101100101100	116	116	
01110101	0100101100001101	117	117	
01110110	0111101101101110	118	118	
01110111	0110101101001111	119	119	
01111000	1001101010100000	120	120	
01111001	1000101010000001	121	121	
01111010	1011101011100010	122	122	
01111011	1010101011000011	123	123	
01111100	1101101000100100	124		
01111101	1100101000000101	125		FIVES '1's
01111110	1111101001100110	126		FIVES '1's
01111111	1110101001000111	127		FIVES '1's
10000000	1111010010110111	128		FIVES '1's
10000001	1110010010010110	129	128	
10000010	1101010011110101	130	129	
10000011	1100010011010100	131	130	
10000100	1011010000110011	132	131	
10000101	1010010000010010	133	132	
10000110	1001010001110001	134	133	
10000111	1000010001010000	135	134	
10001000	0111010110111111	136	135	
10001001	0110010110011110	137		FIVES '1's
10001010	0101010111111101	138	137	
10001011	0100010111011100	139		FIVES '1's
10001100	0011010100111011	140	139	
10001101	0010010100011010	141	140	
10001110	0001010101111001	142	141	
10001111	0000010101011000	143	142	
10010000	1110011010000110	144	143	
10010001	1111011010100111	145	144	
10010010	1100011011000100	146		FIVES '1's
10010011	1101011011100101	147	146	
10010100	1010011000000010	148	147	
10010101	1011011000100011	149	148	
			149	

FIG. 6D CODING TABLE FOR LENGTH 150 TO 199

DATA	PATTERN	DECIMAL VALUE OF FIRST BYTE	REPRESENT LENGTH	NOTE
10010110	1000011001000000	150	150	
10010111	1001011001100001	151	151	
10011000	0110011110001110	152	152	
10011001	0111011110101111	153	153	
10011010	0100011111001100	154		FIVE '1's
10011011	0101011111101101	155		FIVE '1's
10011100	0010011100001010	156	156	
10011101	0011011100101011	157	157	
10011110	0000011101001000	158	158	
10011111	0001011101101001	159		FIVE '1's
10100000	1101000011010101	160	160	
10100001	1100000011110100	161	161	
10100010	1111000010010111	162	162	
10100011	1110000010110110	163		FIVE '1's
10100100	1001000001010001	164	164	
10100101	1000000001110000	165	165	
10100110	1011000000010011	166	166	
10100111	1010000000110010	167	167	
10101000	0101000111011101	168	168	
10101001	0100000111111100	169		FIVE '1's
10101010	0111000110011111	170	170	
10101011	0110000110111110	171		FIVE '1's
10101100	0001000101011001	172	172	
10101101	0000000101111000	173	173	
10101110	0011000100011011	174	174	
10101111	0010000100111010	175	175	
10110000	1100001011100100	176	176	
10110001	1101001011000101	177	177	
10110010	1110001010100110	178	178	
10110011	1111001010000111	179		FIVE '1's
10110100	1000001001100000	180	180	
10110101	1001001001000001	181	181	
10110110	1010001000100010	182	182	
10110111	1011001000000011	183	183	
10111000	0100001111101100	184		FIVE '1's
10111001	0101001111001101	185	185	
10111010	0110001110101110	186	186	
10111011	0111001110001111	187	187	
10111100	0000001101101000	188	188	
10111101	0001001101001001	189	189	
10111110	0010001100101010	190		FIVE '1's
10111111	0011001100001011	191		FIVE '1's
11000000	1011110001110011	192	192	
11000001	1010110001010010	193	193	
11000010	1001110000110001	194	194	
11000011	1000110000010000	195	195	
11000100	1111110011110111	196		FIVE '1's
11000101	1110110011010110	197	197	
11000110	1101110010110101	198	198	
11000111	1100110010010100	199		FIVE '1's

FIG. 6E CODING TABLE FOR LENGTH 200 TO 255

DATA	PATTERN	DECIMAL VALUE OF FIRST BYTE	REPRESENT LENGTH	NOTE
11001000	0011110101111011	200	200	
11001001	0010110101011010	201	201	
11001010	0001110100111001	202	202	
11001011	0000110100011000	203	203	
11001100	0111110111111111	204		FIVE '1's
11001101	0110110111011110	205	205	
11001110	0101110110111101	206	206	
11001111	0100110110011100	207	207	
11010000	1010111001000010	208	208	
11010001	1011111001100011	209		FIVE '1's
11010010	1000111000000000	210	210	
11010011	1001111000100001	211	211	
11010100	1110111011000110	212	212	
11010101	1111111011100111	213		FIVE '1's
11010110	1100111010000100	214	214	
11010111	1101111010100101	215		FIVE '1's
11011000	0010111101001010	216	216	
11011001	0011111101101011	217		FIVE '1's
11011010	0000111100001000	218	218	
11011011	0001111100101001	219		FIVE '1's
11011100	0110111111001110	220		FIVE '1's
11011101	0111111111101111	221		FIVE '1's
11011110	0100111110001100	222		FIVE '1's
11011111	0101111110101101	223		FIVE '1's
11100000	1001100000010001	224	224	
11100001	1000100000110000	225	225	
11100010	1011100001010011	226	226	
11100011	1010100001110010	227	227	
11100100	1101100010010101	228	228	
11100101	1100100010110100	229	229	
11100110	1111100011010111	230		FIVE '1's
11100111	1110100011110110	231		FIVE '1's
11101000	0001100100011001	232	232	
11101001	0000100100111000	233	233	
11101010	0011100101011011	234	234	
11101011	0010100101111010	235	235	
11101100	0101100110011101	236	236	
11101101	0100100110111100	237	237	
11101110	0111100111011111	238	238	
11101111	0110100111111110	239		FIVE '1's
11110000	1000101000100000	240	240	
11110001	1001101000000001	241	241	
11110010	1010101001100010	242	242	
11110011	1011101001000011	243	243	
11110100	1100101010100100	244	244	
11110101	1101101010000101	245	245	
11110110	1110101011100110	246	246	
11110111	1111101011000111	247		FIVE '1's
11111000	0000101100101000	248		FIVE '1's
11111001	0001101100001001	249		FIVE '1's
11111010	0010101101101010	250		FIVE '1's
11111011	0011101101001011	251		FIVE '1's
11111100	0100101110101100	252		FIVE '1's
11111101	0101101110001101	253		FIVE '1's
11111110	0110101111101110	254		FIVE '1's
11111111	0111101111001111	255		FIVE '1's

FIG. 7

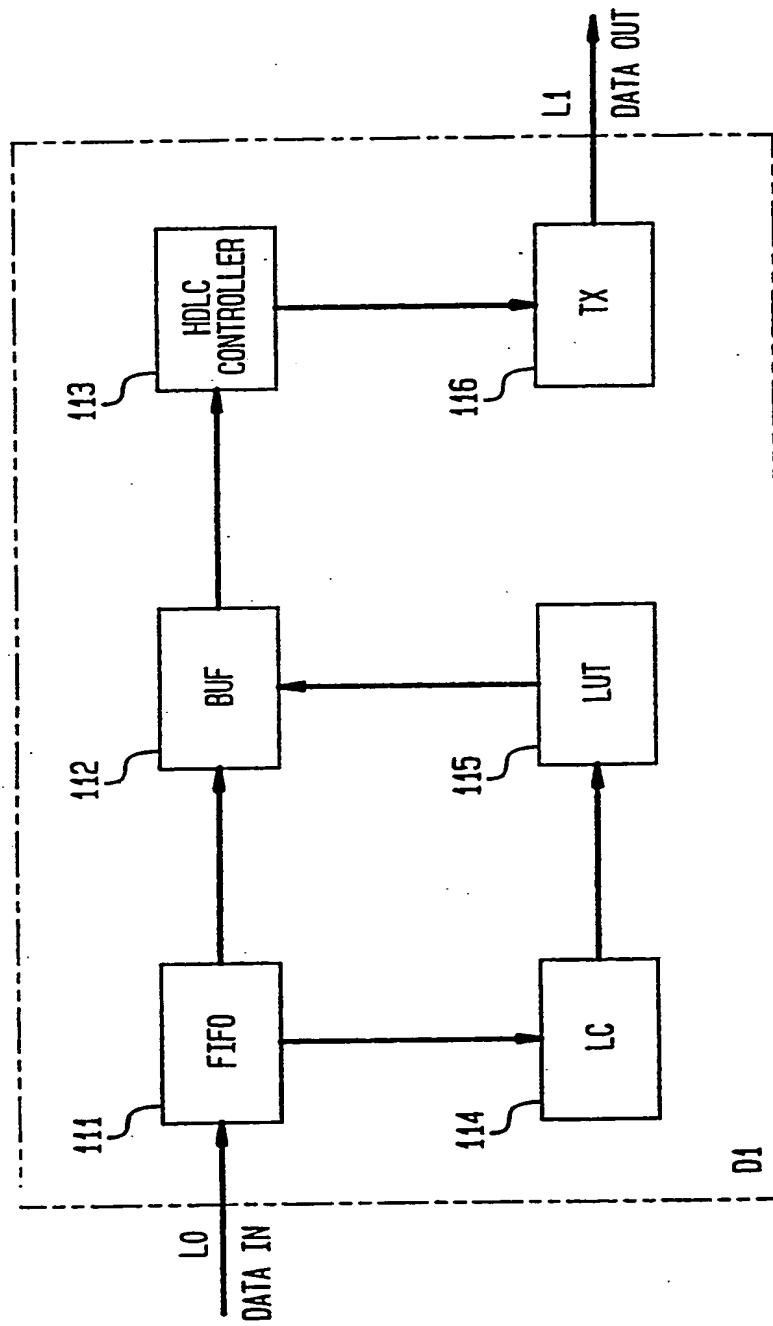


FIG. 8

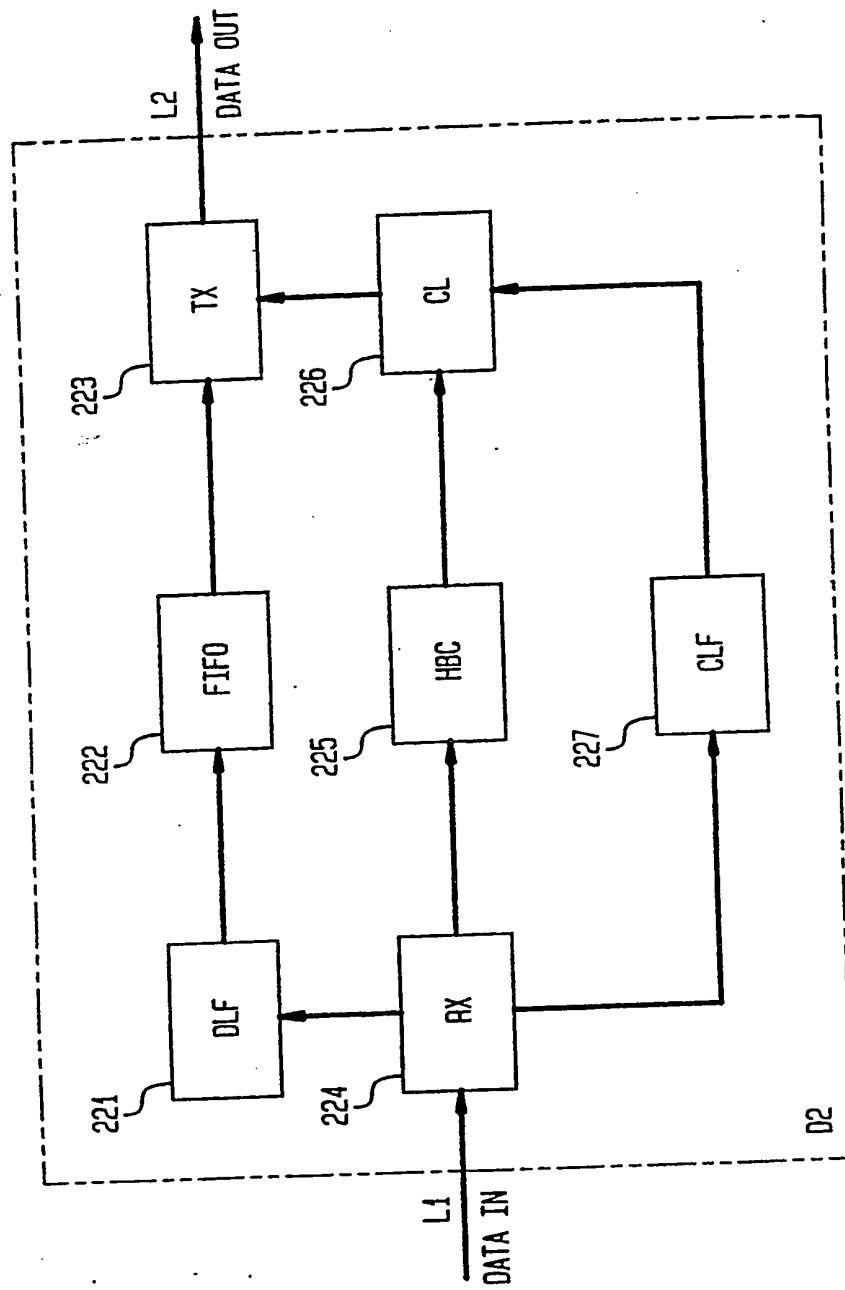


FIG. 9

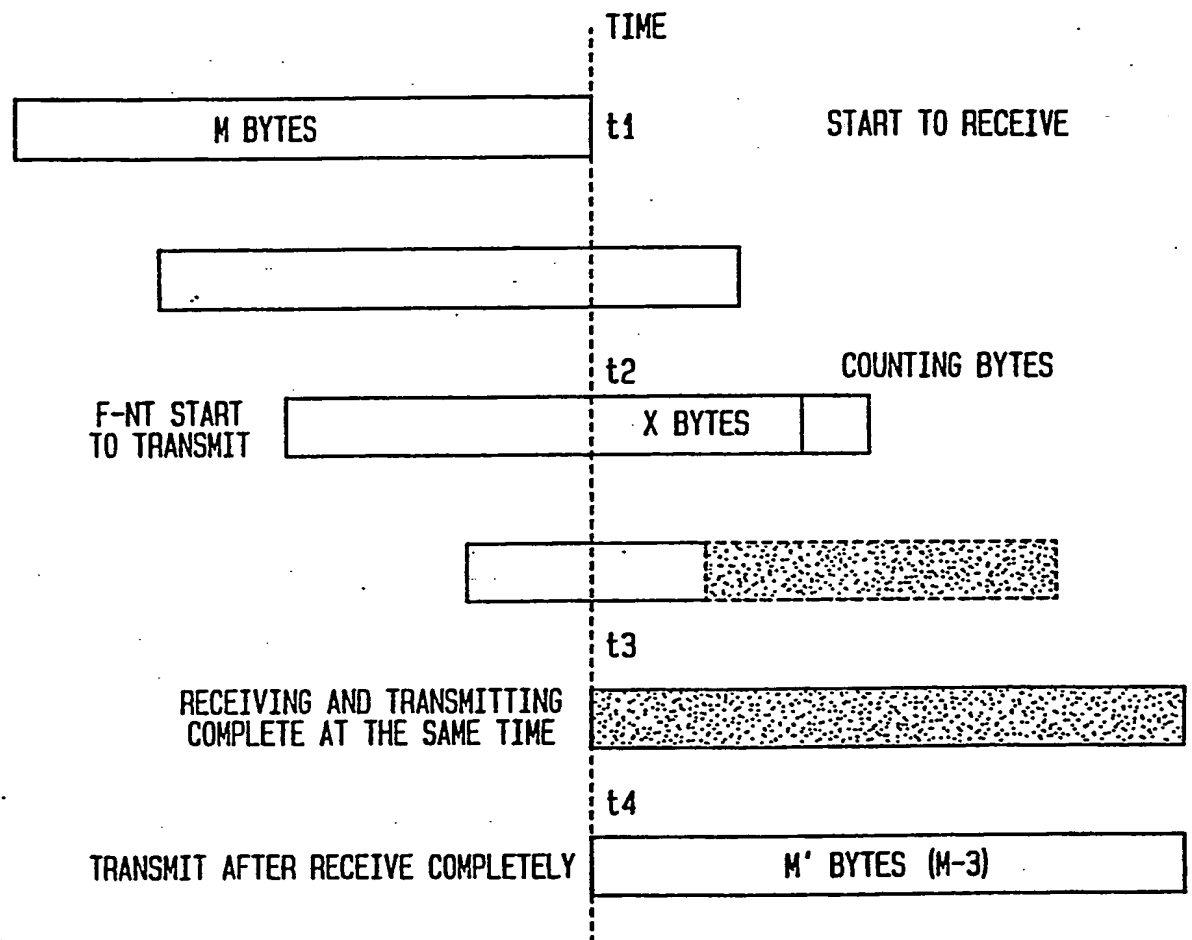


FIG. 10

